Northern Shenandoah Virginia & West Virginia

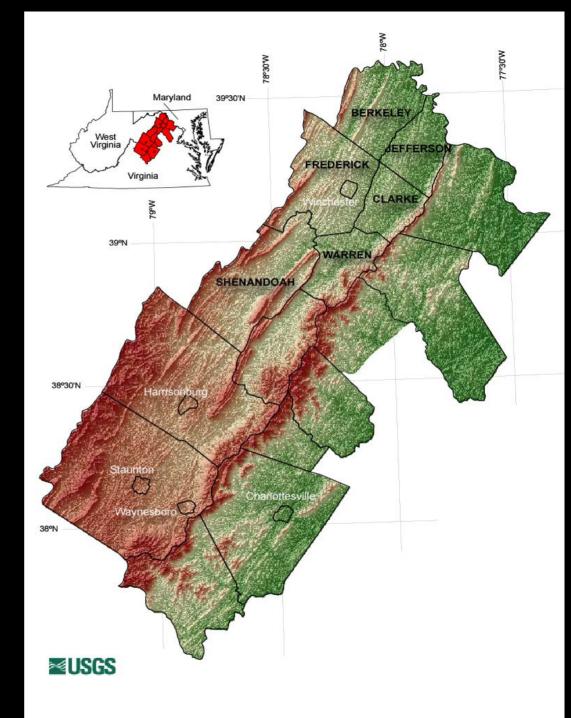


Northern Shenandoah Valley

Virginia & West Virginia







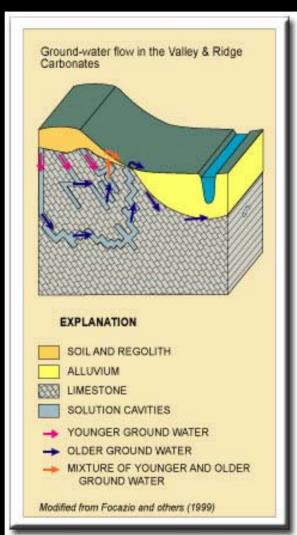
Folded & Faulted Siliciclastic Rocks

Ground-water-flow in the Valley & Ridge Siliciclastics **EXPLANATION** SANDSTONE COLD WATER (YOUNG GROUND WATER) WATER (OLD GROUND WATER)

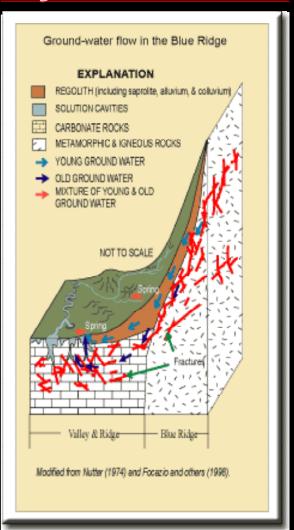
WARM WATER (MIXTURE)

Modified from Focazio and others (1999).

Folded & Faulted Carbonate Rocks



Folded & Faulted Crystalline Rocks





Fractured Siliciclastics: Manassas Run Warren County, Va.





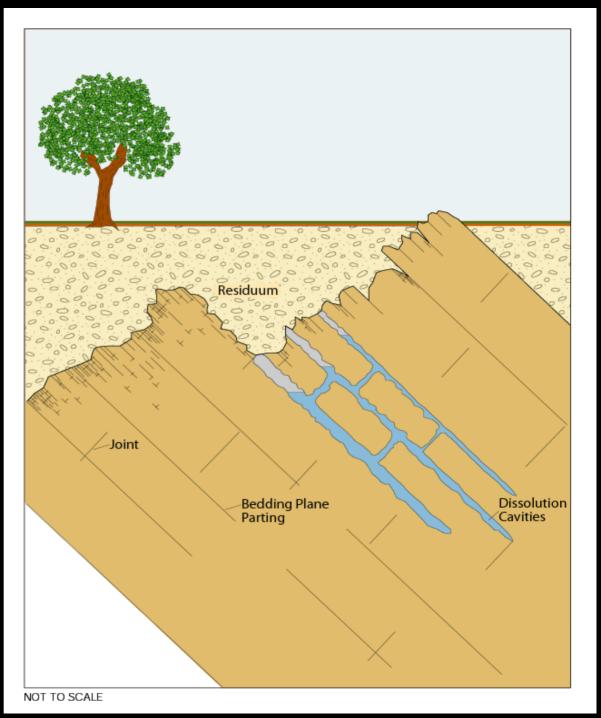


Folded Siliciclastics: North Fork Shenandoah River





Folded & Faulted Carbonates





Folded & Faulted Carbonates Middletown, Frederick County, Va.





Karst Topography



From "Living on Karst"

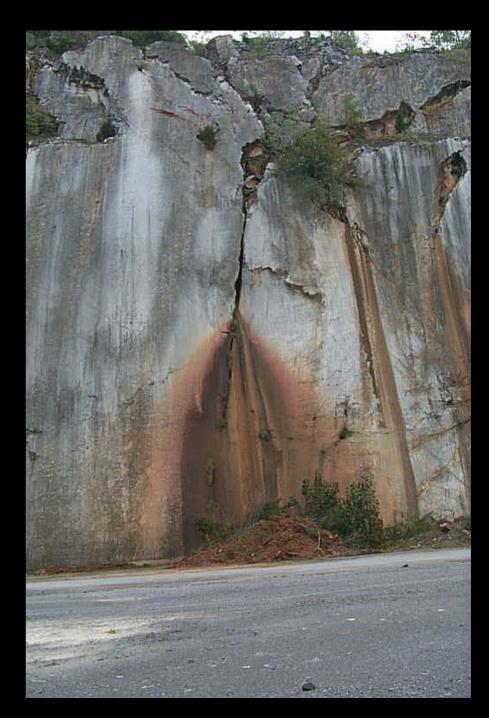


Karst Features

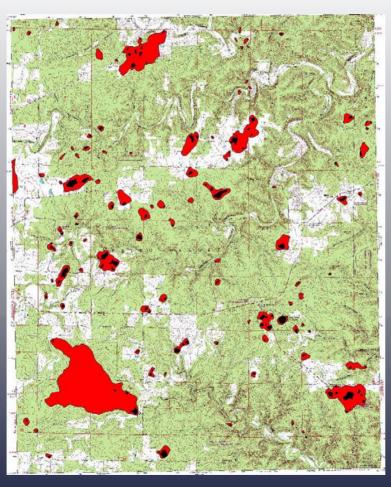












Sinkholes

(789,345 sq meters, 0.5% of area)

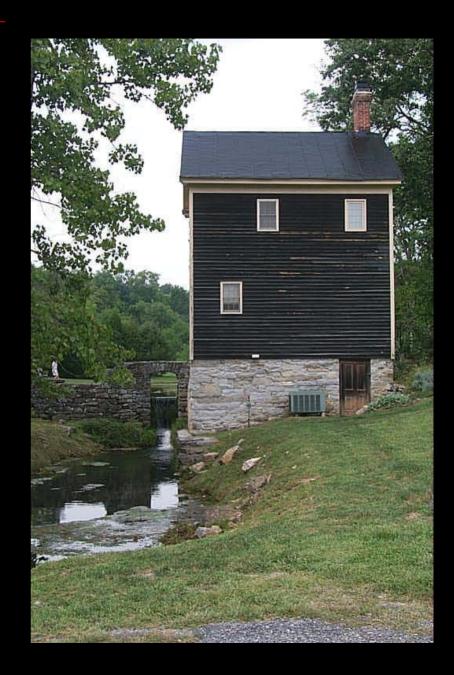
Area drained by sinkholes

(9,017,287 sq meters, 5.86% of area)

Karst Springs

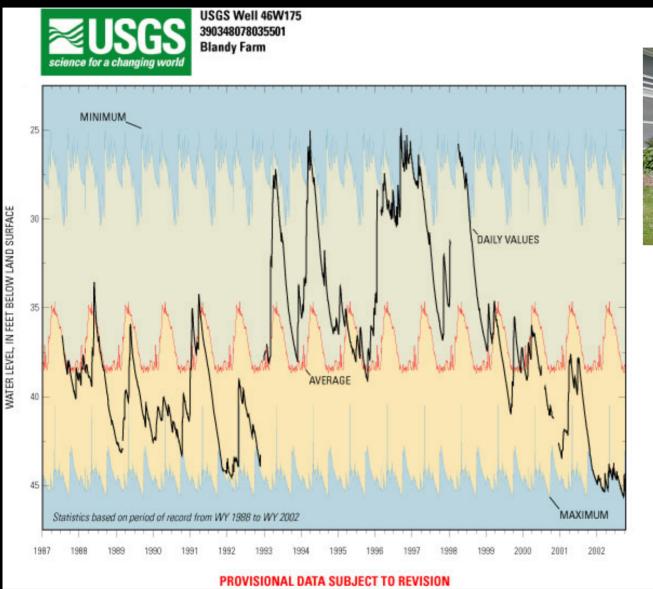








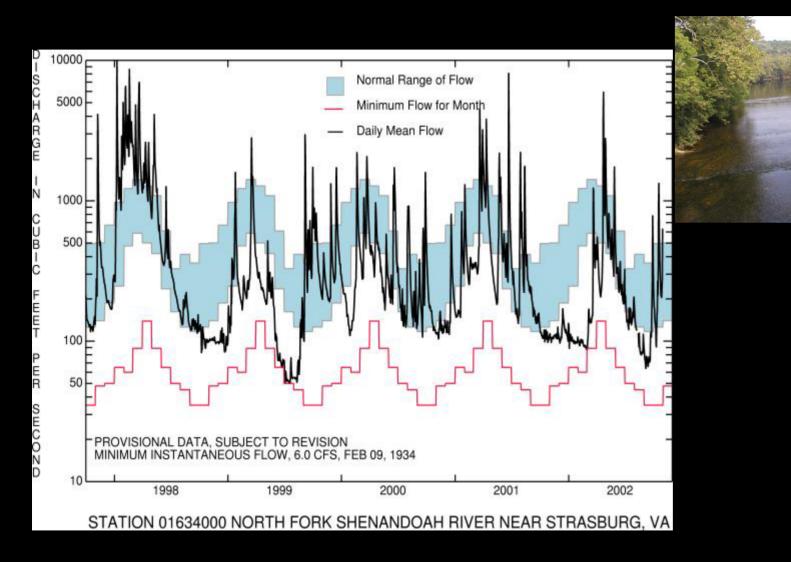
Drought Impacts—Ground Water







Drought Impacts—Surface Water





Study Approach

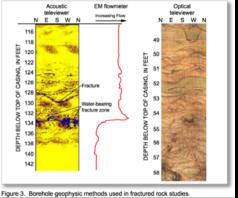








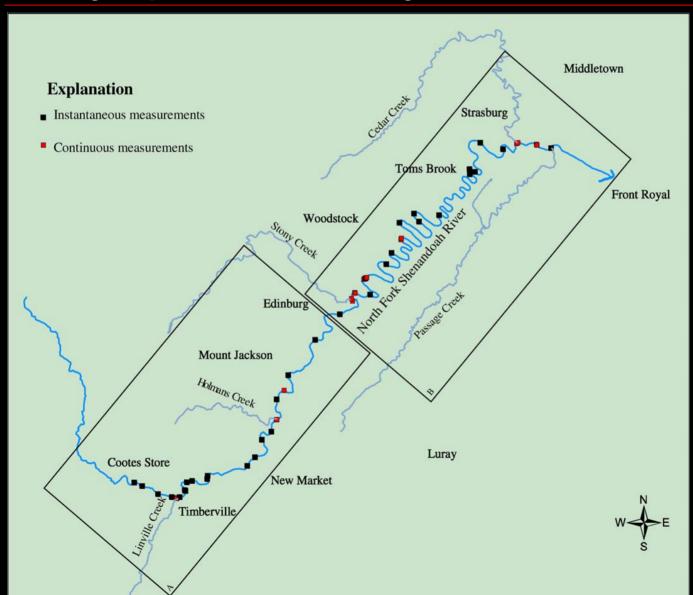








MIF Synoptic Water-Quality Measurement Sites





MIF Water-Quality Measurements

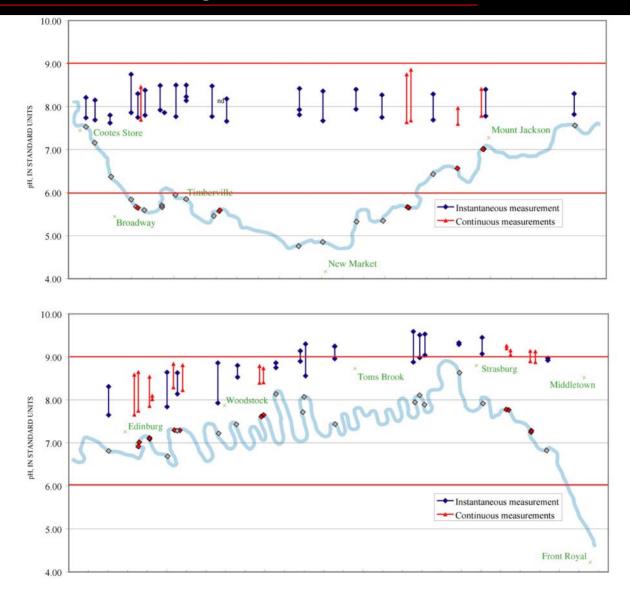
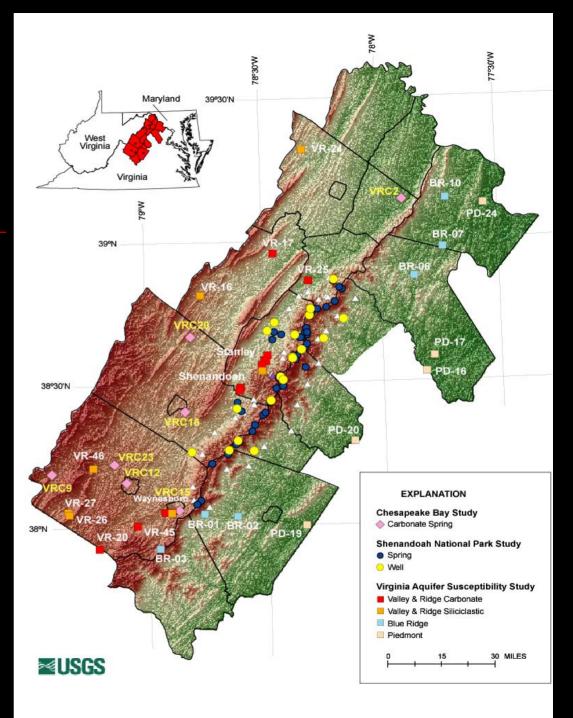




Figure 3. pH values at water-quality monitoring sites along the North Fork Shenandoah River.

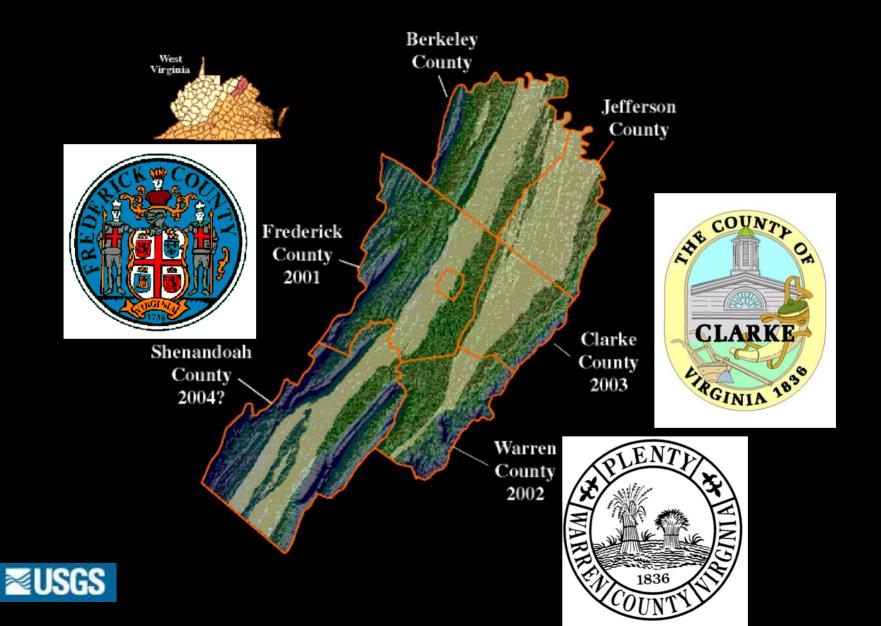
Ground-Water Age Dating in the Northern Shenandoah Valley





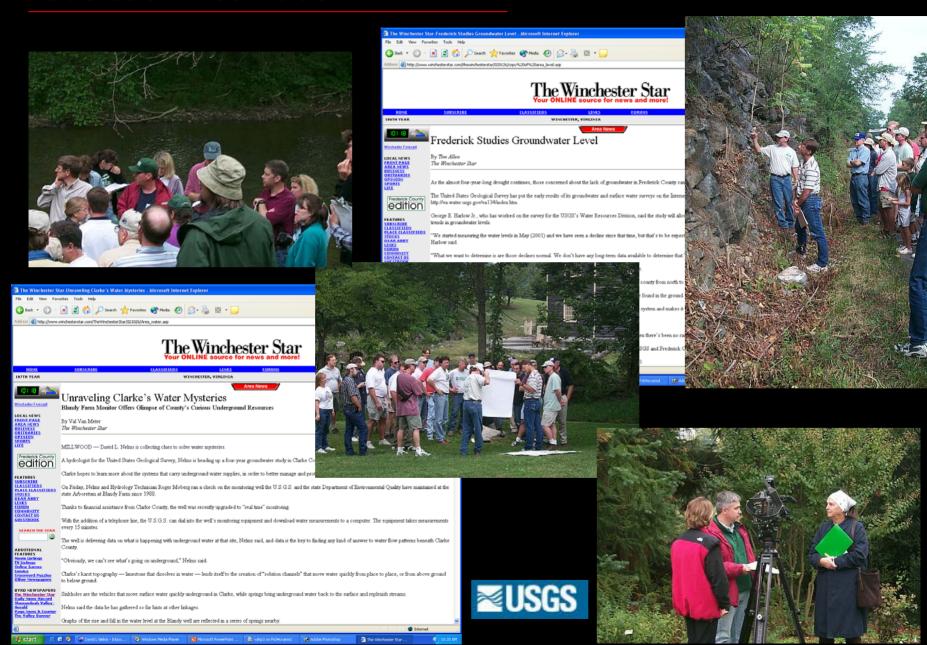


County Cooperators



Data Availability in Frederick County - O 🖹 🛣 🐔 🔎 Santi 🏰 Fantina 🍪 Parina 😥 🗯 🧸 🖾 - 🐷 **≥USGS** Frederick County Home - Microsoft Internet Explorer File Edit View Favorites Tools Help Address a http://va.water.usgs.gov/va134/index.htm Frederick County Carbonate Aquifer Appraisal Ground-Water Level Date Science Plan for 2001 Surface-Water Discharge Data Science Plan for 2002 Publications Science Plan for 2003 Home Page **Updates** Frequently Asked Questions **FCSA Data** Presentations The carbonate agu Shenandoah Valley p local communities. Th economy and a growi Ground-water levels for Virginia us Ground-Water-Level Data in Frederick County likely to be further dev An improved understa is required to effective See the of relected stee to local dark for finar uplead sustainable water sup USGS 391757078095402 45Y 5 provided by a detailed information to better a quantity of water avail increased pumpage of Table.id.data flows, (3) the relation hydrology and geoche water flow systems, a supply and its vulneral enurcee of contamina 😂 🚱 🧿 🕜 David L Nelms - Inbox... Windows Media Play ounty Ho.

Outreach Activities



Current USGS Program Activities in the Northern Shenandoah Valley

National Cooperative Geologic Mapping Program

- Karst Applied Research Studies Project (KARST)
- Bedrock Regional Aquifer Systematics Study (BRASS)

National Landslide Hazards Program

• Debris-Flow Hazards in the Blue Ridge of Virginia

Land and Remote Sensing Program

National Civil Applications Project (NCAP)

Cooperative Water (Coop) Program

Virginia

- North Fork Shenandoah River Instream Flow Study
- Frederick County Carbonate Aquifer Appraisal
- Clarke County Aquifer Appraisal
- Warren County Siliciclastic & Crystalline Aquifers Appraisal

West Virginia

Berkeley County Karst Aquifer Appraisal

Federal Program

Leetown Science Center, W. Va. Karst Aquifer Assessment

National Research Program (NRP)

Kinetic Modeling (Ground-Water Age Dating)

- Shenandoah National Park
- Karst Springs

Transport Phenomena in Fractured Rock

Leetown Science Center

National Water-Quality Assessment Program

Potomac-Delmarva (PODL) Study Unit

Biological Informatics Program

Shenandoah NBII node-proposed



Integrated Assessment of the Northern Shenandoah Valley in Virginia and West Virginia

- The objective of this first integrated regional assessment is to better characterize the aquifer systems in the Northern Shenandoah Valley and provide relevant hydrogeologic information that can be used to guide the development and management of these water resources.
- This regional study of the karst and fractured-rock aquifer systems will use hydrologic, geologic, cartographic, and biologic information to improve the understanding of the aquifer systems, their relationship to surface features, and potential hazards over a multi-county area of Virginia and West Virginia.

